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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/990,783	11/14/2001	Yuch Ping Hsieh	90024	3137
9355	7590	05/03/2005	EXAMINER	
JACQUELINE E. HARTT, PH.D			GAKH, YELENA G	
ALLEN, DYER, DOPPELT, MILBRATH & GILCHRIST, P.A.				
P.O. BOX 3791			ART UNIT	PAPER NUMBER
ORLANDO, FL 32802-3791			1743	

DATE MAILED: 05/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/990,783

Applicant(s)

HSIEH ET AL.

Examiner

Yelena G. Gakh, Ph.D.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 March 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) 14-25 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 March 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. RCE and Amendment filed on 03/21/05 are acknowledged. Claims 1-25 are pending in the application. Claims 14-25 are withdrawn from consideration as directed to the non-elected invention.

Response to Amendment

2. Objection to the Drawings is withdrawn; objection to the specification and rejection of the pending claims over the prior art are modified in view of the amendment, the Applicants' remarks, and the new prior art found by the examiner.

Specification

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. The specification is objected to as not containing "a written description of the invention, ... in such full, clear, concise, and exact terms as to enable any person skilled in the art" to practice the invention in its best mode. In particular, it is not clear from the specification, which rate of a gas evolution in solids and liquids is determined by the method, if the micro-respirometer is constantly shaking. It is well known from the prior art that agitating a vessel containing the sample, which produces carbon dioxide increases the rate of evolution by increasing the rates of forming the gas and diffusion from the sample into air (see e.g. Chicoye et al. US 4,068,005, col. 1, lines 43-53; "Shaking Soda Cans"). Moreover, Stotzky (Method Soil Anal., 1965) specifically indicates that "it is neither necessary nor desirable to rotate flask to increase CO₂ absorption" (page 1554); the examiner interprets this as warning that shaking the sample changes the evolution rate of CO₂, and thus the measurements do not reflect a "natural"

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evolution rate. The specification refers only to increasing an absorption rate of carbon dioxide, obtained from non-analogous experiments of absorbing CO₂ by the reagent from the air. The latter is a different and much simpler physical-chemical process involving carbon dioxide, since it does not involve evolution of carbon dioxide from the liquid or solid sample and diffusion of the evolved gas into air. It is not clear, how the results of these experiments can be introduced into a more complex process of CO₂ evolution from the liquid or solid sample. The experiments are designed to optimize conventional parameters of CO₂ absorption, such as the shaking rate of the vessel, which increases diffusion of CO₂ into the reagent solution, and NaOH concentration. Experiment #4 is not clear. It just demonstrates increasing the rate of absorption with increasing CO₂ concentration, which is an obvious fact. It is not clear, what this experiment has to demonstrate, and how it can be used for the "real" case.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claims 2-3 and 13 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The specification discloses a method for measuring specifically a *natural* evolution rate of CO₂ from the samples. On the other hand, the claims recite shaking the sample and the solution to enhance carbon dioxide absorption. The prior art specifically warns against shaking the sample, which the examiner interprets as disabling the method for measuring the natural evolution rate of CO₂ since such external factor as shaking the sample affects the rate of evolution and therefore distorts data.

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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8. Claim 13 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The equation recited in claim 13 is not clear as to whether the concentration M of alkaline is constant over time increment t, and if this is the case, then how the evolution rate can be measured, if it should be based on *changing* the concentration with time?

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. **Claims 1, 4-10 and 12** are rejected under 35 U.S.C. 102(b) as being anticipated by Stotzky (Method Soil Anal., 1965).

Stotzky teaches “microbial respiration”, including a method for measuring an evolution rate of CO₂ from a sample by a steady-state technique (page 1553) comprising colorimetric analysis, i.e. absorbing CO₂ by alkaline solution comprising pH indicator (pp. 1556-1557). Steady-state technique inherently comprises pre-incubation of the sample to reach the steady state of the system. Stotzky provides the following manual for performing measurements: “after flashing the residual air from the incubation vessel, attach the outlet tube of each vessel to a CO₂ collector containing a known volume of KOH or NaOH solution of a concentration such that not more than two-thirds of the alkali will be neutralized by the CO₂ to be collected. Attach CO₂ collectors to empty incubation vessels to serve as controls for CO₂ absorbed from atmosphere during the procedure. Replace the CO₂ collectors with fresh collectors periodically during the incubation period. After CO₂ absorption, rinse each bubble tower into the corresponding alkali container with CO₂-free water, add an excess of BaCl₂ to precipitate the carbonate as BaCO₃, add a few drops of **phenolphthalein indicator**, and titrate the unneutralized alkali with standard HCl directly in the container. Alternatively, make the titration in the absence of phenolphthalein

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using an automatic titrator. Titrate the CO₂ collectors from the control vessels concomitantly with those from the treatment vessels, thereby necessitating standardization of only the HCl" (page 1564).

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

13. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

14. **Claim 11** is rejected under 35 U.S.C. 103(a) as being unpatentable over Stotzky (Method Soil Anal., 1965).

Although Stotzky does not specifically teach repeating the same procedure several times and averaging the time increments, it would have been obvious for any routineer in the art to do so, because it is a conventional practice in any analysis to obtain data for the same process in order to use average for improving the results output.

Response to Arguments

15. Applicant's arguments filed 03/21/05 have been fully considered but they are not fully persuasive.

The examiner withdrew the objection to drawings and modified the objection to the specification in light of the amendment. The objection regarding shaking the sample remains for the same reasons as were indicated in the previous Office action, supported by the warning of the new prior art.

The Applicants' arguments regarding the rejection of the pending claims over the prior art renders moot in view of the changed ground of rejections established in the present Office. If the applicants have a different opinion, the examiner would like to ask the applicants to provide any reference, which would describe equilibrium in such system.

Conclusion

16. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. *Rowell* (Soil Biol. Bioch., 1995) teaches "colorimetric method for CO₂ measurement in soils", comprising pre-incubating the sample with a dilute bicarbonate solution containing a pH indicator. *Rowell* implies shaking of the vessel for obtaining the color when analyzing test samples (page 373, right column).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yelena G. Gakh, Ph.D. whose telephone number is (571) 272-1257. The examiner can normally be reached on 9:30 am - 6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill A. Warden can be reached on (571) 272-1267. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

5/1/05


YELENA GAKH
PRIMARY EXAMINER